REMARKS

I. INDEFINITENESSS REJECTION AND CLAIM CHANGES

Claims 22 to 28 were rejected as indefinite under 35 U.S.C. 112, second paragraph, for failing to particularly point out and claim the subject matter of the invention.

New claims 29 to 35 replace canceled claims 22 to 28. The new claims 29 to 35 are rewritten versions of canceled claims 29 to 35, which have been drafted to overcome the indefiniteness rejection.

However the order of the new claims is different from the order of the canceled claims. New method claims 29 to 33 replace canceled method claims 24 to 28 respectively, i.e. claim 29 replaces claim 24, claim 30 replaces claim 25, etc. New method claims 34 and 35 replace canceled method claims 22 and 23.

In the new independent method claims 29 and 34 the subject matter of the last paragraphs of canceled claims 22 and 24 is included in new steps of "controlling" the cutting forces so that they are large enough to form the fissure but not so large that they cause uncontrolled breaking of the glass sheet prior to completion of the fissure.

The last two paragraphs on page 3 of the applicants' specification provide a basis for this new step. Note page 3, lines 18 to 20, of the originally filed specification provide a basis for the object of the invention, namely applying an appropriate cutting

force to make an adequate fissure across the glass sheet without causing premature breaking of the glass sheet, while lines 26 to 30 of page 3 provide a basis for specifying the values of the cutting forces with a controller, i.e. controlling the cutting forces adapted to the glass sheet thicknesses to achieve the object of the invention.

Otherwise steps a to f of claim 29 contain the same subject matter as steps a to f of claim 24, except that the wording has been changed somewhat by using the terms "different regions" with "different glass sheet thicknesses" consistently through out the steps instead of the various terms "variable thickness" and "thickness variations". Also step d has been changed to a step of measuring the inhomogeneous thickness distribution (referring back to the preamble of this method claim) to determine said different thicknesses in said different regions.

The changes of the aforesaid paragraph are generally supported by the disclosure on page 5, line 15, to page 6, line 2, particularly see page 5, lines 19 to 20, where different regions of the glass sheet of greater and smaller thickness are disclosed. These changes are believed to make the claimed method simpler to understand and more definite.

Dependent claims 30 to 33 generally contain the same subject matter as dependent claims 25 to 28 respectively. Only claim 31 includes any additional subject matter. Claim 31 includes the statement that the controller is connected with the position sensor to determine when the cutting tool reaches the switchover points. This statement is supported by the disclosures on page 9, lines 1 to 9, of applicants' originally filed specification.

New independent claim 34 does contain subject matter from claim 22. Steps a

to e of claim 34 correspond in their subject matter to steps a to e of claim 22, but also contain somewhat different wording as well as additional limitations. The wording of step c of claim 34 regarding continuously measuring thickness values at points of contact of the cutting tool with the glass sheet as the cutting tool moves over the glass sheet is supported by step d) of claim 22. This feature is also supported by page 6, lines 4 to 8, of applicants' originally filed specification. New claim 34 also claims a method in which the cutting force applied at the respective points of contact of the cutting tool depends on corresponding measured thickness values of the glass sheet at the respective points of contact as the current tool moves across the glass sheet. These features are actively supported by the disclosure on page 4, lines 8 to 15; on page 6, lines 4 to 8, and on page 8, lines 26 to 28.

For example on page 6, lines 4 to 6, the specification states:

> "Optimized implementation of the method is given when the glass thickness is detected continuously by the sensors during cross-cutting and the cutting force is automatically adjusted as a function thereof."

One of ordinary skill in the glass arts would interpret this sentence as meaning that in the embodiment described by the above-quoted sentence the cutting tool moves from one side of the moving sheet to the other during scoring (that is the meaning of "during cross-cutting") and, as the cutting tool moves from one side to the other, the respective different glass thicknesses of the glass sheet at the correspondingly different positions of the cutting tool are measured ("during cross-cutting") and the respective applied cutting forces at the different positions of the cutting tool are adjusted automatically as a function of the measured glass sheet

thicknesses at the different positions. That is clearly stated in steps d and f of claim 34. Hence the disclosures in the originally filed specification support the new claim 34.

II. ANTICIPATION REJECTION

Claims 22 to 28 were rejected as anticipated under 35 U.S.C. 102 (b) by Frederick (US 3,880,028).

The Claimed Invention

New method claims 29 to 35 contain similar subject matter to that in canceled method claims 22 to 28. Independent method claim 29 contains subject matter from canceled independent method claim 24. Independent method claim 34 contains subject matter from canceled independent method claim 22. The differences between the new claims and the canceled claims are explained in the above section I.

The Prior Art

The apparatus of Fredrick includes a roller conveyor 11 that conveys a glass ribbon 12 and a bridge 10 arranged to span the conveyor, which has a movable cutter carriage 14 on which a scoring wheel 16 is mounted. A device, which can be mechanical, pneumatic or electrical (column 2, lines 30 to 33), whose details are not described, adjusts the pressure of the cutting tool or wheel on the glass surface (column 1, lines 63, to column 2, line 2), in order to obtain a better quality cut or score either under control of an operator or automatically under control of controller 35..

The apparatus has a sound pickup device 30, which detects the sound that

results as the cutting tool scoring the glass ribbon (column 2, line 53, to column 3, line 5). The pressure on the cutting tool is adjusted according to the sounds that are detected by the sound pickup device 30 (column 1, line 58, to column 2, line 2) either by an operator observing a meter that shows the sound level or automatically under control of controller 35 that automatically adjusts the force applied by the cutting tool on the glass sheet.

Thus the reasoning in the rejection appears to be based on the assumption that the thickness of the glass sheet can be derived from the measured sounds of the scoring tool moving over the glass sheet. The specification of Fredrick does state that the sound emitted by the scoring depends on "such factors as the hardness of the glass, the thickness of the glass and the configuration of the scoring means". Additionally it depends on the apparatus parameters such as sound frequency being monitored and the scoring or cutting speed. Particularly the reference states that the sound indicates the "scoring speed" at column 5, lines 16 to 22. There is no teaching in Fredrick that measured values of the glass sheet thicknesses at points at which the cutting tool contacts the glass sheet can be derived or calculated from the measured scoring sound signals for glass sheets in which the glass sheet thickness varies or changes or that the measured different thickness values can be displayed on a display device.

The sonic signal does not only depend on the thickness, which is mentioned only once as one parameter among many that influence the sound signal, in column 5 of Fredrick. In addition it depends on the hardness of the glass. The summary of invention of Fredrick primarily mentions that the sonic detector measures variations

of hardness of the glass surface as the cutting tool moves across the glass ribbon during cross-cutting in column 2, lines 3 to 8. Also the sonic signal depends on the variation of annealing effects on the surface of the glass an also the scoring speed. (column 5, lines 23 to 45).

The reference does **not** mention that different regions of the glass sheet or ribbon have different thicknesses or that the glass sheet has an inhomogeneous thickness distribution across the glass sheet.

Fredrick does **not** state that their sonic detector can detect differences in the thickness of different regions of the glass sheet or thickness variations of the glass sheet as the cutting tool moves across the glass sheet.

At best, the sonic detector of Fredrick measures could only measure an average thickness of the glass sheet. The forced vibrations of solid bodies are a well-studied part of classical physics. Various theoretical models can be used to estimate the vibrational modes, frequencies and intensities of the sound produced by solid bodies. A body such as a glass sheet vibrates as a whole under an impressed force from e.g. the cutting tool, so that the sound signals would depend on the glass sheet dimensions including the average thickness (sound waves have wavelengths that are large in comparison to glass sheet thicknesses). There would be no way to determine the variation of glass sheet thickness across the sheet, which is usually comparatively small in any case, even if the hardness of the glass sheet and surface effects of the glass sheet were perfectly uniform across the glass sheet. Consequently the best the sonic detector of Fredrick could do would be to measure an average thickness of the glass sheet as it traverses it. Even that is not disclosed

by Fredrick.

Also note the disclosure in column 4, lines 28 to 55, of Fredrick, which teaches that the depth of the score can be controlled by detecting the sonic signals from the sound pick-up device (i.e. microphone). Of course controlling the depth of the score is not the same as controlling the applied force of the cutting tool.

It is well established that each and every limitation of a claimed invention must be disclosed in a single prior art reference in order to be able to reject the claimed invention under 35 U.S.C. 102 (b) based on the disclosures in the single prior art reference. See M.P.E.P. 2131 and also the opinion in ***In re Bond***, 15 U.S.P.Q. 2nd 1566 (Fed. Cir. 1990).

In summary, the differences between the claimed invention and the prior art are:

(1) Fredrick does **not** disclose that the glass ribbon or sheet has respective different regions having correspondingly different thicknesses.

(2) Fredrick does **not** disclose that the sonic detector can measure an inhomogeneous thickness profile across the glass sheet or that it can measure the different thicknesses in the different regions of the glass sheet or the thickness variations across the glass sheet.

(3) Fredrick does **not** disclose a method in which different cutting forces are applied to the different regions of the glass sheet and that the different cutting forces are larger when the different regions are thicker but smaller when the different regions are thinner.

(4) With respect to claim 34 only, Fredrick does not disclose that the different

thicknesses of the glass sheet at contact points of the cutting tool are measured as the cutting tool moves across the glass sheet with the inhomogeneous thickness distribution during cross-cutting and that the correspondingly different cutting forces applied at the contact points of the cutting tool depend on the measured thickness values at those contact points.

For the foregoing reasons it is respectfully submitted that new claims 29 to 35 should not be rejected as anticipated under 35 U.S.C. 102 (b) by Fredrick.

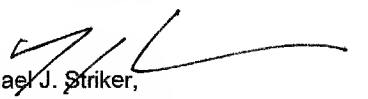
Similarly the modifications of the disclosures in Fredrick that are necessary to arrive at the applicants' claimed invention would **not** be obvious to one of ordinary skill in the art.

For the foregoing reasons it is respectfully submitted that new claims 29 to 35 should not be rejected as obvious under 35 U.S.C. 103 (a) by Fredrick.

Should the Examiner require or consider it advisable that the specification, claims and/or drawing be further amended or corrected in formal respects to put this case in condition for final allowance, then it is requested that such amendments or corrections be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing the case to allowance, he or she is invited to telephone the undersigned at 1-631-549 4700.

In view of the foregoing, favorable allowance is respectfully solicited.

Respectfully submitted,



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